Neurology

Prenatal Diagnosis of Inherited Neurologic Diseases

FORTY-TWO HEREDITARY METABOLIC disorders are potentially diagnosable before birth; the diagnosis has been made prenatally in 14 of them. These disorders are transmitted as either autosomal recessive traits or X-linked recessive traits with a 25 percent recurrence risk in subsequent siblings of an affected child. Nearly all these disorders are fatal, untreatable and involve severe mental retardation. In addition to these metabolic disorders, numerous chromosomal defects, most of which increase in frequency with advancing maternal age (highest risk group, mothers over 40), can be diagnosed prenatally. The optimal time for amniocentesis is at 16 to 18 weeks of pregnancy. In California, second trimester diagnostic amniocentesis has been performed most frequently at medical school affiliated hospitals, including UC Davis, UC San Francisco, Stanford, USC, UCLA, Loma Linda, UC Irvine and UC San Diego.

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Brain Death

CARDIAC TRANSPLANTATION AND ITS dramatic life-saving potential require viable donor organs. Salvage of such organs necessitated modification of the traditional concept of death with the introduction of "brain or cerebral death" as tantamount to death despite the presence of cardiac rhythm. Currently agreed upon criteria hinges upon electrical evidences indicating no spontaneous brain activity. Thus, a comatose patient, in the absence of sedative over-dosage or hypothermia, demonstrating two consecutive one-half hour "flat or isoelectric electroencephalograms" (EEG) over a 24-hour interval is recognized to have irreversible coma.

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Treatment of Cerebral Edema

CEREBRAL EDEMA HAS been demonstrated to be the cause of significant morbidity and mortality in association with trauma, neoplasm, infarction, infection, and toxic and metabolic disorders of the nervous system. Dehydration of the acutely swollen brain can be rapidly produced in 20 to 30 minutes by intravenous infusion of a urea solution by creating an osmotic gradient for water to leave brain. A 20 percent mannitol solution in distilled water can be administered in the same manner and with much the same results. Another technique of reducing cerebral swelling is to passively hyperventilate which will reduce $PaCO_2$ and result in cerebral vasoconstriction. Subacute or chronic cerebral edema can be reduced for weeks or months with dexamethasone 4 mg every 6 hours. Within 24 hours, patients may show an improvement in the state of consciousness and in the levels of their vital signs.

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Normal Pressure Hydrocephalus

"NORMAL PRESSURE OR OCCULT hydrocephalus" represents a landmark recognition of a treatable dementia. This entity is characterized by spasticity with hyper-reflexia, ataxia, occasional urinary incontinence and dementia. Invariably, the spinal fluid pressure is normal, pneumoencephalography demonstrates dilated ventricles with failure of air to pass over the cerebral cortex, radioactive iodinated serum albumin (RISA) in-

jected into the lumbar subarachnoid space refluxes into the ventricular system rather than pass over the cerebral cortex, and the spinal fluid absorption is defective as demonstrated with the "flush" test. In this syndrome, ventriculoatrial shunting has frequently resulted in dramatic improvement in the clinical status of these patients.

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Treatment of Febrile Seizures

GENERALIZED CONVULSIONS associated with fever constitute a common neurological problem in children under three years of age. Whether and how the patient subject to febrile convulsions should be treated continues to be a subject of controversy. The ideal prophylactic therapy consists of prevention of sudden rises of temperature with aspirin; this is obviously a difficult and impractical approach. The use of aspirin and phenobarbital when the child is afflicted with a febrile illness has been recommended by some observers, while the continuous administration of an anticonvulsant agent—phenobarbital or dilantin—is advocated by others. Recent studies suggest that diphenylhydantoin is ineffective in preventing febrile convulsions even when effective serum concentrations of the drug are achieved. On the other hand, phenobarbital administered twice a day in double the normal dose for three days (60 to 150 mg per day depending on weight) followed by a maintenance dose given twice daily (30 to 75 mg per day) appears to be effective prophylactic treatment provided blood levels of the drug are maintained between 10 and 20 micrograms per ml. Since adequate blood levels usually cannot be achieved in less than three days, intermittent therapy is bound to be ineffective.

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The Neurology of Drug Abuse

COMPLICATIONS ARISING from drug abuse frequently mimic primary medical and neurological disorders. Familiar examples are subacute bacterial endocarditis and mycotic aneurysm following intravenous heroin, seizures with barbiturates, and organic psychosis after amphetamines. Recently, the occurrences of strokes and subarachnoid hemorrhages (SAH) have dramatically brought to the attention of practitioners yet another disabling and serious complication of drug abuse. The mechanisms of stroke and SAH are not completely understood, but they relate to (1) allergic vasculitis, (2) vascular spasm, or (3) intense hypertension.

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Prophylaxis of Vascular Headaches

METHYSERGIDE (Sansert®, Sandoz), 2 to 8 mg daily, provides effective headache prevention in 50 to 70 percent of patients with migraine and other vascular headaches. Serious side effects associated with prolonged use of methysergide include peripheral vascular insufficiency and retroperitoneal, cardiac valvular, and pleuropulmonary fibrosis. Patients receiving the drug should be examined monthly for such side effects and, in addition to frequent blood and urine studies, should have chest films, electrocardiograms and intravenous pyelograms performed at least yearly. The risk of side effects is reduced by stopping the drug for one month every six months. The use of methysergide should be restricted primarily to patients with one or more severe migraine headaches monthly and patients with cluster headaches. Some patients will find ergotamine tartrate, 0.5 to 1.0 mg daily, as effective as methysergide but with a much lower incidence of serious side effects.

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